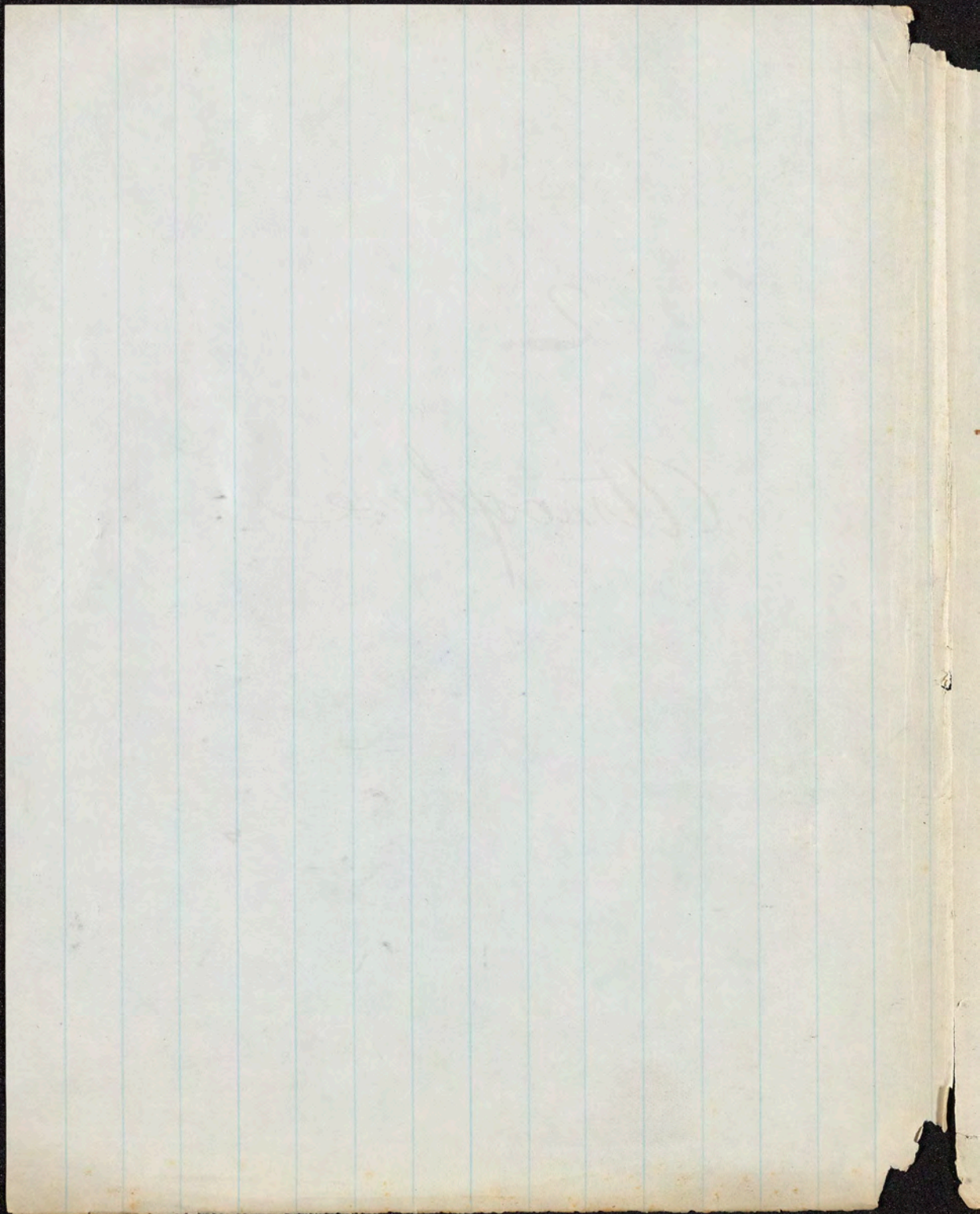
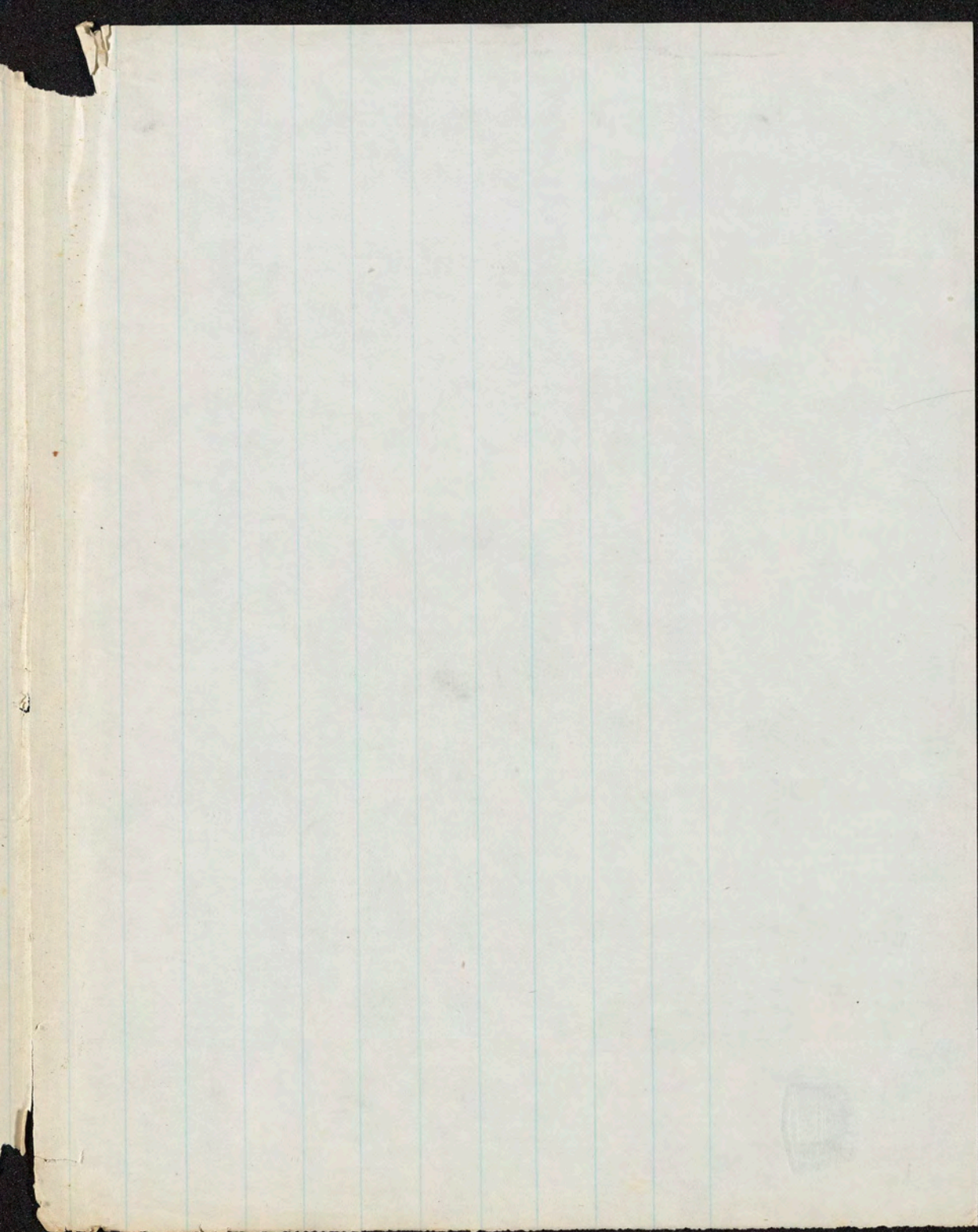


2

Atmosphere.





SUSPENDED  
MATTER.

COMMON  
SALT.

ORGANIC  
FORMS.

in the air

near the sea.

Suspended matter is either mineral or organic

Common salt is <sup>almost</sup> ~~very~~ abundant. Other salts are <sup>occasionally</sup> present; also, steel filings, cotton fibres, &c. from manufactories.

Organic forms also, are met with. The microscope detects germs, ova &c. If we look at a line of sun-light we will see the innumerable quantity of suspended objects. Tyndall D.D.

←  
←  
VERY  
NUMEROUS.

We breathe and drink and eat millions of living creatures constantly.

*Darwin*

In the blood of the sheep, bacteria are found, suggesting that diseases may perhaps be caused in this way in human beings. Vibriones, &c. also.

MITCHELL'S  
FUNGUS OF  
THEORY OF  
FEVERS.

~~more than 30 years ago~~  
~~He proposed his fungus theory of fevers.~~  
J. H. Mitchell

ITS  
REVIVAL.

This theory <sup>a fungus since</sup> was renewed by Salisbury of Ohio. <sup>The same physician</sup> ~~showed~~ that a fungus growth on damp straw causes measles. <sup>like the</sup> ~~He proposed~~ preventing measles by giving this fungus disease, just like vaccination.



DR. WOODWARD.

ORGANIC CELLS  
EPITHEMAL "  
PUSS  
STARCH CORPUSCLES  
&c.

MICROSCOPICAL  
EXAMINATION

~~that Dr. Woodward has announced~~  
~~observation of a number of malarial microphytes (Siph., gon.)~~  
Dr. Woodward repeated these experi-  
ments but could not confirm them.

The air of rooms, contains def-  
inite organic forms: - organic cells,  
starch corpuscles, epithelial cells, &  
in hospitals, pus cells. - Eiselt, Poulet, &c.

In examining the air, we have  
a clean tube and direct a jet of air  
on a glass plate moistened with

on "life in the atmosphere" which is instantly put un-  
der microscope.

Living Age

hospital gangrene, and  
supposed to be caused by  
spores in the air.

No. 1016 Oct. 10, 1863

the need of thorough

"Disease-forms."

Samuelson's observation  
rags & their dust, from

in of these infusoria is  
noticed. If an ~~air~~ <sup>infusoria, as seen</sup> ~~leaf~~

alexia - Japan - Melbourne

Tunis - Trieste - Peru &c

Conclusions - 1. Atmosphere is  
everywhere charged with spores  
of min. veg. & anim. nature,  
including spores & germs of  
animalcules & sometimes the rarely  
germs of nematoid worms.

a warm place for two  
ys, it will be found to  
any more animals than  
hence arose the idea of  
"generation". Acarus Crossii -  
incorrect. If examined

2. The infusoria comprise not  
only monads, vibriones, bac-  
teria, but also glaucina, cy-  
clides, vorticella &c. - <sup>and</sup> ~~air~~

H  
P

OF

SPD



~~that the laboratory has announced~~  
~~observation of a number of malarial microphytes (Seph. gon.)~~

DR. WOODWARD.

Dr. Woodward repeated these experiments but could not confirm them.

ORGANIC CELLS  
EPITHEMAL "  
PUSS "  
STARCH CORPUSCLES,  
SC.

The air of rooms, contains definite organic forms: - organic cells, starch corpuscles, epithelial cells, & in hospitals, pus cells. - Eiselt, Pouchet, &c.

MICROSCOPICAL  
EXAMINATION.

In examining the air, we have a clean tube and direct a jet of air on a clean plate moistened with glycerin, which is instantly put under the microscope.

ERYSIPELAS,  
HOSPITAL  
GANGRENE,  
PHTHISIS.

Erysipelas, hospital gangrene, and phthisis are supposed to be caused by these cells suspended in the air.

Hence the need of thorough ventilation. <sup>an added reason for</sup> "Disease germs."

ORIGIN OF  
THESE  
INFUSORIA

The origin of these infusoria is not well settled. <sup>quite</sup> If a <sup>infusoria, as they</sup> ~~leaf~~ be put in a warm place for two or three days, it will be found to contain many more animals than at first. Hence arose the idea of spontaneous generation. <sup>Vegetation forms</sup> "Acarus Crossii".

SPONTANEOUS  
GENERATION.

<sup>almost certainly</sup> This is incorrect. If examined

Disinfectants.

Fresh Air,  
 Abundant Water,  
 Charcoal, (wood tar,  
 Lime, (Coal tar  
~~Dark~~ Earth, Coal tar  
 Nitrate of Lead. (Ledoyen's),  
 Sulphate of Iron,  
 Chlorine: chloride of soda (Labarraque's)  
           chloride of lime, chloride of  
           zinc (~~Labarraque's~~) (Burnetts),  
 Permanganate of Potassa (Condy's),  
 Nitroso-nitric acid,  
 Sulphurous acid,  
 Carbolic acid (Ridgewood's. McDou-  
           galls, Gorme & Demeaux),  
 Iodine, Chloralum.  
 Bromine,  
 Ozone,  
 Heat, and  
 Cold.

\* Gorme, 1867,  
 recounted, after a  
 denied negative experiment  
 of his own.

[End of 3<sup>d</sup> Lecture, 1872]

End of 13<sup>th</sup> Lecture, 1870

to contain  
germs are  
let some\* also.  
? but there  
? Redi and  
Harvey  
that every  
from another  
manipulation.

sources of  
From 12  
Less than  
it, 5 pr. ct.  
it, sure to be so.  
it, candle.  
30 grs. of  
This  
chemically  
ammonia compounds

1867. Journal of Hygiene  
are soaked in alcohol.  
Life - no general development in  
of his microbes, could not be  
Kymen after 5 hours testing

nitrogenous and forms ammonia,  
darkening ~~SO<sub>2</sub>~~ and decolorizing per-  
manganate of potassium. This latter  
is therefore a good test. In testing,  
1 gr. of organic matter is equivalent  
to 1 gr. of sugar.

The odor in a room becomes

TRUE  
THE

RESPI

EXHAL

TEST.

Donné of Paris asserts

Successful experiments in  
air necessary veg.  
Spontaneous generation in water & animals.

Bulletin de l'Acad. des  
Sciences - Arch. Gen. de Med.  
Oct 1866. Afterwards recanted, 1868.

Pasteur denies, showing room  
for error, in the manipulations.

Ozone,  
Heat, and  
Cold.

[End of 3<sup>d</sup> Lecture, 1872]

End of 13<sup>th</sup> Lecture, 1870

very minutely,

probably

the leaves would be found to contain  
T.W.D. 2 agree that germs are

TRUE  
THEOR

Against all the doubts it? but there  
"part. gen." expeir itation that Redi and  
ments we have to or they said that every  
about the impossibility is formed from another  
of such manipulation Difficulties in manipulation.  
as to exclude, at Lecture XVI  
some stage or other, consider further the sources of  
the air.

RESPIRA

EXHALA  
A

all "aerobed" or causes CO<sub>2</sub>. From 12  
aerophyta, or then 000 often exist; 5 pr. ct.  
ova or spores. n. 16 per cent. continued, same to be so.  
See Wyman's experiments. exhalates about 30 grs. of  
in 24 hours. This  
mell. It is chemically

nitrogenous and forms ammonia,  
darkening SO<sub>2</sub> and decolorizing per-  
manganate of potassium. This latter  
is therefore a good test. In testing,  
1 gr. of organic matter is equivalent  
to 1 gr. of sugar.

TEST.

The odor in a room becomes

For  
Abu  
Ch  
Li  
D  
Ni  
Su  
Ch  
Pe  
Ni  
Su  
Ch

Pouchet - <sup>more</sup> lately,

Donné, continued to  
assert spontan. generation

Pasteur denies.  
(Donné has given it up, 1868).

Darwin ascribes the  
rotting of fruit to micro-  
scopic fungi - which  
also may affect leaves &  
stems with decay.

over

asserts

in  
anecess. to veg,

water in animals.

Acad. des

recanted, 1868.

how soon  
speculations.

Ozone,  
Heat, and  
Cold.

[End of 3d Lecture, 1872]

End of 13th Lecture, 1872

very minutely,

probably

the leaves would be found to contain  
ova. <sup>scattered</sup> ~~all~~ <sup>now agree</sup> that germs are  
necessary for generation. <sup>Pouchet</sup> ~~Some~~ <sup>also</sup>.

TRUE  
THEORY.

Wyman still doubts it? but there  
need be no hesitation that <sup>Pouchet</sup> ~~Redi~~ <sup>and</sup> ~~Harvey~~  
were right when they said that every  
living being is formed from another  
living being. Difficulties in manipulation.

[End 3<sup>d</sup> Lecture, 1872]

Lecture XVI

We ~~will~~ still consider <sup>further</sup> the sources of  
impurities in the air.

Respiration causes  $\text{CO}_2$ . From 12  
to 70 pts. in 10,000 <sup>often</sup> exist; <sup>less than</sup> 5 pr. ct.  
is fatal to man. <sup>16 pr. ct. continued, sure to be so.</sup>

An adult <sup>Still will of Green's work</sup> exhales about 30 grs. of  
organic matter in 24 hours. This  
has a fetid smell. It is chemically  
nitrogenous and forms <sup>readily</sup> ammonia,  
darkening <sup>also</sup>  $\text{SO}_3$  and decolorizing per-  
manganate of potassium. This latter  
is therefore a good test. In testing,  
1 gr. of organic matter is equivalent  
to 1 gr. of sugar.

The odor in a room becomes

RESPIRATION.

EXHALATION  
OF  
ADULT

TEST.

Dr Angus Smith estimated the amount  
 of organic matter in pure air at 1 gr. in  
 200,000 cub. ft. In a house, 1 gr. in 16,000 to  
 40,000 c. ft. In close-packed r.r. car, 1 gr. in  
 8000 ft; & a house with sewer air in it, same.  
 Decolorized permangan. potassa — & darkens  $\text{SO}_2$  drawn  
 through it.

End of 24<sup>th</sup> Lecture, 1871.

Ochlesis  
 ↑

perceptible if not strong when ~~the~~ reaches 1 pt. in 1000. organic matter

DISEASES CAUSED BY IMPURITIES.

Contamination of the air, when long continued causes disease. Typhus fever is thus caused; though some say it is <sup>only</sup> caused by a special contagion. It occurs in camps, ships, and jails. The doubts are of recent origin.

TYPHUS FEVER

Typhus is produced by foul air, in colder regions, <sup>Typhus fever is less frequent.</sup> than unlike typhoid. In Great Britain & Ireland it is very common where poverty, low temperature, bad air &c. abound.

ITS CAUSE.

~~Typhus~~ is caused by the concentration of emanations from human beings. After it is once produced, it is contagious. One who has it, has the poisoning power of a crowd of healthy persons. <sup>transmission to jails court-rooms.</sup>

HISTORICAL CASES.

In 1577, there were 500 typhus deaths in England. In 1750, four judges, and others, in all, about 40,

↑ ↑ ↑ ↑ ↑  
 Murchison — <sup>↑ ↑ ↑ ↑ ↑</sup> "pythogenic fever"  
 ↑

In N. Y. & Brooklyn, 1872, "Spotted fever"

So accounts for — ~~schist. fever~~ <sup>in a few days</sup>

in ~~five~~ <sup>five</sup> days —  
 Cholera arrested, on Blackwell's Island N. Y., 1866, by Dr. Hamilton  
 & Mr. Lewis Lusk, by turning the men out & ventilating thoroughly

Island of St. Kilda, of North Hebrides,  
 enormous mortality of infants — "trismus neonatorum"  
 from inhabitants living in close huts with manure floors.

died from the air of the court  
rooms, at the periodical assizes. <sup>+</sup>

TYPHOID.

It has been doubted whether ty-  
phoid is caused by foul air. <sup>+</sup>  
In this country we have it  
already said in all climates, at all times.

TWO  
STAGES.

Typhoid is not contagious.  
It has in its causation, a per-  
sonal element, perhaps hereditary  
as in phthisis

It requires some exciting cause,  
as absence from home. Foul air  
promotes it.

EFFECT  
OF FOUL AIR  
ON IT.

Foul air tends to <sup>increase the malignity of</sup> produce all en-  
demics & epidemics. This is illus-  
trated in foundling hospitals. In  
London, out of 10 <sup>in 4 yrs. after good ventilation, reduced to 300 in same time.</sup> <sup>have wisely resolved, for the period of</sup> <sup>to come, to decline all applications for</sup> <sup>on of strange children into their institu-</sup>

CASE  
MENTIONED  
BY  
RICHARDSON.

Richardson me  
in which one died  
The rest of the c  
from the house  
after (3 weeks) w  
He died likewise  
thoroughly clean

AMDEN ITEMS.

MASONIC.  
ving Masonic lodges have elected their  
he ensuing year:—Camden Lodge, No.  
Hardacre, W. M.; Allen M. Powell, S.  
w B. Frazee, J. W.; James H. Stevens,  
ames M. Cassady, secretary. Trimble  
17—George F. Fort, W. M.; M. B. Tay-  
Nathan F. Cowan, J. W.; H. G. Taylor,  
G. Milligan, secretary. Siloam H. R.  
No. 19—Henry U. Homes, High Priest;  
rdacre, King; N. F. Cowan, Scribe;  
roth, treasurer; George Shattuck, sec.

GRAND JURORS.  
wing gentlemen have been selected by  
dericks as grand jurors for the January  
he Camden county courts:—Casper F.  
Robert C. Cook, Joseph J. Read, Chas.  
David Hutton, James Elwell, Isaac  
Armstrong Lapp, Joseph Sharp, John  
Oster, Josiah

Scarlet fever most in close quarters; may still be a

↑  
 Murchison — <sup>lately called</sup> pythogenic fever.

In N. Y. & Brooklyn, 1872, <sup>Spitzerforn</sup>  
 So accounts for — ~~Gschl. D. & one house~~ in a few days.

in five days —  
 Cholera arrested on Blackwell's Island N. Y. 1866, by Dr. Hamilton  
 & Mr. Lewis Lusk, by turning the men out & ventilating thoroughly

Island of St. Kilda, of North Hebrides,  
 enormous mortality of infants — "trismus neonatorum"

from the Spectator of to-day:—

It appears to be gradually becoming certain that the Prince and Lord Chesterfield were attacked by the fever during the visit to Lord Lonsborough. It appears that the Prince slept in a room into which a closet opens, and the closet communicates with a cesspool ten feet below which has not been cleansed for six years, and this very room was occupied by Lord Chesterfield after the Prince's departure. There is also evidence that there was a back draft of sewer gas up the sewers, and the *Lancet* believes that the air of Lonsborough Lodge, which was at the time excessively crowded both with guests and servants, was "really tainted." As the male guests usually retired to rest fatigued with a long day's sport they were just in the condition to imbibe the poison, the smell of which, adds the professional journal, would not of necessity have been perceived in a house "pervaded by odors of a more agreeable kind," that is, we suppose, by the smell of tobacco smoke. The facts are, of course, most annoying for Lord Lonsborough; but he did all he could to insure the salubrity of his house, and is not to be blamed because the plumbers were, as usual, not to be trusted for anything except their charges. If we could hang one of them for murdering a Prince the world would be an improved place to live in.

to live in close huts with manure fero.

died from the air of the court  
rooms, at the periodical assizes. <sup>+</sup>

TYPHOID.

already said.

TWO STAGES.

It has been doubted whether ty-  
phoid is caused by foul air. <sup>+</sup>

In this country we have it  
in all climates, at all times.  
Typhoid is not contagious.  
It has in its causation, a per-  
sonal element, perhaps hereditary  
as in phthisis

It requires some exciting cause,  
as absence from home. Foul air  
promotes it.

EFFECT  
OF FOUL AIR  
ON IT.

increase the malignity of  
Foul air tends to produce all en-  
demics & epidemics. This is illus-  
trated in foundling hospitals. In  
London, out of 1000, 2000 died <sup>in 4 yrs; after good ventilation reduced to 300 in same time.</sup>

CASE MENTIONED  
BY  
RICHARDSON.

Richardson mentions a family  
in which one died of scarlet fever.  
The rest of the children were kept  
from the house for a good while  
after. (3 weeks) when one returned.  
He died likewise. The house was  
thoroughly cleaned out and  
Scarlet fever <sup>work in close quarters; may strike to a house.</sup>

Dent is in Sanitary Science  
what sin or the dent, is in ethics religion?  
the one the always to be detest and edification.

Attendee, at St. Bartholomew's, 1872-3, found a  
remarkable improvement in the results of operations, after  
Hospitalization

Substituting carbolic hair brushes  
all cases.

Tartar

Chemical Cleanliness

dentists  
cleanliness: - 1 prophylaxis  
- e.g., by Lister's treatment of  
absorbent  
dysentery - 1 disease  
mentary  
Lister's treatment of  
Sept. 56

End of 18th Lecture, 1873.

End of 15th Lecture 1868

Space of 1 page for these

continuous molecular  
change. (Butter making)

Septic process

Septic and - septic matter;

Dissecting wounds - Scratch of cat; - contaminated beak

carbolic acid  
Lissonnaud  
Griegor  
subcutaneous supply  
putrescent matter injected into pentonum  
of an animal

Burdon Sanderson's experiments with

Measles, smallpox, cholera, typhoid fever, all  
 greatly worst in ill ventilated streets & in close foul houses,  
 whitewashed. Another returned & died. It seemed as if no cleaning  
 would prevent it. The reason was that it was on low ground, <sup>with low ceilings</sup>

PARIS HOSPITAL.

In a ~~hospital~~ hospital in Paris, hav-  
 ing four departments, three of  
 them had erysipelas and one had  
 not. It was better ventilated than  
 the others. Dr. Harlow's experience at Nashville.  
 Experience in tent hospitals - no dysentery & no pyæmia.  
 Pulmonary complaints: phthisis,  
 bronchitis, pneumonia, prevail  
 in foul air especially.

②

PULMONARY COMPLAINTS.

①

PHTHISIS.

Phthisis was so frequent in the  
 British navy, that the subject was  
 investigated and it was attribut-  
 ed to over-crowding: same in army, barracks.

EXHALATIONS FROM SICK.

③

Bells may pass and cause it  
 The exhalations from sick are  
 worse than from the well. Flies  
 congregate more in an hospital  
 around a dying man. <sup>Urine-charges.</sup>

SEWAGE

Sewage often accounts for  
 the bad health of certain portions  
 of a city. Sputa of phthisis (Watson) attract flies  
 more than other excretions. <sup>Sewer of London & other cities.</sup>

in animal

[End of the Section, 1873.]

\* I knew of a case where scarlet fever occurred in some of the inmates of a house, from which one of the children was absent & escaped the disease. This child did not return to the house for a year. At the end of that time returning home, that child was soon attacked with scarlet fever & died of it.

DIFFICULTY  
OF  
REMOVING  
SMELLS.

It is sometimes impossible to get rid of emanations from sick. They are absorbed by the bedding, furniture, walls, &c.

Dr. Hammond <sup>one of the</sup> states that <sup>in New York</sup> a certain hospital <sup>many cases of hospital</sup> having gangrene, was cleaned, but in vain. <sup>the disease</sup> It returned as soon as more patients came; till the Hospital was torn down & rebuilt.

VENTILATION  
AND  
SUNSHINE.

~~Dr. Harlowe says that ventilation and sunshine remove diseases.~~

PENNA.  
HOSPITAL.

In the Obstetric department of the Penna. Hospital, puerperal fever was <sup>repeatedly</sup> prevalent and could not be removed - & given up - <sup>now the work of the Hyg. Assocn.</sup>

ABSORPTION  
OF  
ORGANIC  
MATTER.

Organic matter is absorbed by water, wool, feathers, <sup>clothes, bedding, carpets</sup> straw, horse-hair & <sup>smooth</sup> hard walls, absorb it least.

PAINTING

Painting is good, if there are no cracks. ⊕

TEST  
OF EMPTY  
ROOM.

Dr. Hammond tested an empty room, which had contained sick men and afterwards ventilated,

Barrack Hospital!

10 year lasty —  
(Belling's see)

End of 16<sup>th</sup> Lecture 1867

Began to use my original notes at this place.

and he found undoubted evidence that organic matter still remained. — Chalvert, in Paris, reports the amount of <sup>organic</sup> ~~inhabited~~ <sup>as high as 30 per cent.</sup> ~~inhabited~~ <sup>as high as 30 per cent.</sup>

WHITEWASHING.

Whitewashing should be renewed.

WALL-PAPER.

Wall Paper absorbs organic matter.

Repapering, without taking off the old paper, is very unhealthy.

CALCIMINING.

Calcimining is very good.

PARIAN CEMENT.

Parian cement and several liquid stone preparations are now used. Some ~~put~~ <sup>are</sup> to impermeable walls.

(?) From 36 to 46 per cent of organic matter has been found in a ~~the~~ hospital ward, by Chalvert, in Paris.

OPHTHALMIA.

Among diseases conveyed by cells, <sup>gonorrhoea</sup> ~~is~~ <sup>or the purulent</sup> ~~is~~ <sup>is</sup> opththalmia. X

COMBUSTION.

Combustion injures the air. Solid carbon is thrown into it.

LONDON

(God of coal) In London, the fogs are <sup>sometimes</sup> so thick, that a person can not see a few feet ahead.

CO<sub>2</sub>.

CO<sub>2</sub> is rapidly diffused <sup>in the open air</sup>, so that not much difference can be observed between cities and the country.

One cubic foot of gas in burning will  
 consume the oxygen of <sup>to 15</sup> 8 cubic feet of air,

1872, I forgot to name among the impurities of gas,  
 carbonic oxide, and bisulphide of carbon;  
 both of which make it more poisonous.

Hammond says One good gas-burner will  
 produce as much  $\text{CO}_2$  as 8 men in breaths the  
 same length of time. Leeds (Lect. on Ventila.) states  
 the spoiling of air, by consumption of O & increase of  
 $\text{CO}_2$ , by one burner, = that of 11 men. Cameron  
 puts it = that of 3 men! But he calculates only  
 the oxygen taken, apparently not the  $\text{CO}_2$  added to it.

Other products of combustion are sulphurous acid, carbonic oxide, sulphuretted hydrogen, &c.

One pound of coal requires 240 cub. feet of air. A lamp requires 3 cub. ft. per hour. Burning-gas also requires <sup>like considerable</sup> an amount of air. People often get head-ache from stoppage of circulation of air.

The very worst contamination of air, is sewer gas. The London sewers give off from one to one & a half cubic inches of gas per hour. Rapid asphyxia is often caused. There was a case of 23 children, of whom two died, who, had asphyxia from the opening of a privy. I saw one more case.

Sewer gas consists of carbonic acid, sulphuretted hydrogen, carb-<sup>phosph.</sup>o-ammoniacal gases, &c.

Sewer men are said to be liable to typhus, & ophthalmia.

Sewer openings near houses,

AMOUNT OF  
AIR  
REQUIRED  
FOR  
COMBUSTION.

SEWER  
GAS.

ASPHYXIA.

COMPOSITION  
OF  
SEWER GAS.

SEWER  
MEN

In the summer of 1875, four men  
lost their lives by going down a well  
& taking a privy next to it: asphyxia.

Prince of Wales' case, typhoid fever, Nov. 1871  
 at Scarborough (Lowestborough Lodge) - water-  
 closet in his room commun. with badly drained  
 sewer.

National Hotel epidemic at  
 Washington, 1856. Low site, leak of sewer  
 air into heater and chamber - contamination of air  
 & water of the hotel. Severe dysentery - a few  
 instances fatal - in several chronic & obstinate.

Dissecting room dysentery.

Typhoid fever in Philada. (See Dr. B. Lee's report)  
 most destructive where water & air are hurt by sewers;  
 as Kensington & Richmond, near Delaware Co.

[Sewer men; see Med. News Ship]

End 15<sup>th</sup> Lecture 1869